

PROCEEDINGS
OF THE
BIOLOGICAL SOCIETY OF WASHINGTON

A LIST OF THE BATRACHIANS AND REPTILES OF
THE DISTRICT OF COLUMBIA AND
VICINITY.

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The following list which completes the series, published by various authors in various papers, upon the vertebrata of the District of Columbia, represents the work of many collectors extending over a long series of years. The compilation of records was begun in 1890 by Mr. Frederick C. Test, at that time aid to the curator of Reptiles in the United States National Museum, and since 1895 has been continued by the author.

Extensive collecting by Mr. Test and myself with the cooperation of many friends, among whom I might mention several of my pupils at the Central High School, has been the means of adding new species to our known fauna and of establishing numerous additional stations for those already known.

In the effort to make my paper of greater value than a mere list of species I have prepared keys to all the species known to occur, or likely to occur within our limits, and have given brief descriptions and such notes on the habits as my very limited space makes possible. I have drawn the descriptions of form and color largely from the paper of my father, Dr. O. P. Hay, on the Batrachians and Reptiles of the State of Indiana, but have been at some pains to modify them to suit the peculiar require-

ments of the present case. The notes on the habits are such as I have been able to make during some fifteen years of collecting in the central states and in this locality, but most of those on the cries of the frogs have been furnished me by Mr. Gerrit S. Miller, Jr., who has enjoyed exceptional advantages for the observation of these animals.

It is a matter of regret to me that my paper could not have been expanded into many times its present volume so that these extremely interesting and much neglected groups of animals might have been given an adequate exposition, but under the circumstances it has been impossible.

My thanks are due to the many friends who have assisted in the compilation of records, but perhaps most of all to Dr. L. Stejneger, of the United States National Museum, who has been kind enough to review my manuscript, and call my attention to errors which otherwise would have appeared in the text.

Key to the Classes and Orders.

- a.* Body scaleless in all our species; covered with a skin which is usually smooth, soft, and more or less slimy, but sometimes rough and warty; eggs laid in or near the water and giving origin to tadpoles (Water-dogs, salamanders, toads, and frogs). Class **BATRACHIA**.
- b.* Body with a distinct tail throughout life; hind limbs, if present, not especially enlarged. Order **CAUDATA**, p. 123.
- bb.* Body without tail except during immature stages; all four limbs present, the hind pair much the larger. Order **SALIENTIA**, p. 127.
- aa.* Body covered with yielding, overlapping scales, or enclosed in a bony, box-like shell; eggs, when laid, deposited on land and giving origin to young which are similar in form to the adults (alligators, lizards, snakes, and turtles). Class **REPTILIA**.
- c.* Body not enclosed in a shell. Order **SQUAMATA**, p. 132.
- cc.* Body enclosed in a box-like shell (turtles). Order **CHELONIA**, p. 142.

CLASS BATRACHIA.

Up to the present time the known species of *Batrachia* of the region about Washington number 23. These are distributed as follows: Caudata 11, Salientia 12. The distinguishing characters of these groups having been given above; there follows the key to the order Caudata.

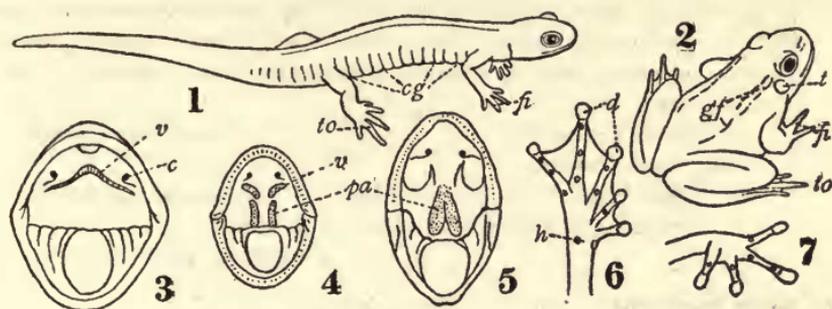


FIG. 1. Topography of the salamanders and frogs. *cg*, costal grooves; *fi*, fingers; *to*, toes; *gf*, glandular folds; *v*, vomerine teeth; *pa*, parasphenoid teeth; *c*, choanæ; *d*, adhesive disks; *h*, heel; *t*, tympanum.

Key to the Species of Caudata.

- a.* Body eel shaped; hind limbs absent: - - - *Siren lacertina*, 1.
- aa.* Body salamander-shaped; all 4 limbs present.
- b.* Toes 4 in front and 4 behind. - - - *Hemidactylum scutatum*, 3.
- bb.* Toes 4 in front and 5 behind.
- c.* Parasphenoid teeth present.
- d.* Tongue mushroom-like, attached by a central stalk only.
- e.* Costal grooves 13 or 14.
- f.* Tail not much, if any, longer than rest of animal; yellowish, back with median row of dots, and two dusky bands. *Spelerpes bislineatus*, 6.
- ff.* Tail considerably longer than rest of animal.
- g.* Yellow, with many black spots; tail with black cross bars. - - - - *Spelerpes longicaudus*, 8.
- gg.* Yellow, back with a broad median and two lateral bands; tail with yellow cross lines. *Spelerpes guttolineatus*, 7.
- ee.* Costal grooves 15 to 17; red, with many small black dots. *Spelerpes ruber*, 9.
- dd.* Tongue attached by a median longitudinal band running from the central stalk to the tip, therefore extensively free only at the sides.
- h.* Costal grooves 16 to 19. Color dark ashy or brown, with or without a rusty dorsal band. - *Plethodon cinereus*, 4.
- hh.* Costal grooves 14.
- i.* Black above, with small white dots. *Plethodon glutinosus*, 5.
- ii.* Brownish, variously mottled and marbled with darker and ochraceous. - - - - *Desmognathus fusca*, 10.
- cc.* Parasphenoid teeth absent.
- j.* Tongue small, free at the sides; a medium sized species, greenish or red, belly yellow with many black specks. *Diemictylus viridescens*, 11.

- jj.* Tongue large, attached by nearly the whole posterior surface and almost filling the mouth; large clumsy species, brown or black, variously marbled or spotted with whitish or yellow.
- k.* Costal groves 11. - - - *Ambystoma opacum*, 2.
- kk.* Costal grooves 12.
- l.* Sole with 2 distinct tubercles. *Ambystoma tigrinum*, 2a.
- ll.* Sole with 1 indistinct tubercle or none.
Ambystoma jeffersonianum, 2b.

1. *Siren lacertina* Linnaeus. Siren; Mud Eel.

Body elongate, eel-like; head flat, tapering to the blunt snout; three pairs of external gills; eyes very small; anterior limbs short, with 4 toes; hind limbs absent. Bluish black, paler below. Length 2 to 3 feet.

A single record from the Potomac Flats testifies to the presence of this species within our limits. It seems to spend most of its time in the soft mud of swamps, and is, therefore, seldom observed even where it is common.

2. *Ambystoma opacum* (Gravenhorst). Marbled Salamander.

Body short, stout, and swollen; tail short; limbs weak. Dark brown or black above, with about a dozen bluish gray cross bars; an irregular splotch on head and nape of the same color. Length $3\frac{1}{4}$ inches.

Reported from Takoma Park, Laurel, Md., and Mt. Vernon, Va. At the latter locality I took two specimens from under an old stump in a very dry locality.

2a. *Ambystoma tigrinum* (Green). Tiger Salamander.

Body large, heavily built, with long tail, and stout legs. Bluish or brownish black, more or less spotted or blotched with bright yellow. Length, 5-10 inches.

There are no definite records for this species within our limits but it will doubtless be found to occur here.

2b. *Ambystoma jeffersonianum fuscum* (Green). Jefferson Salamander.

Body and head rather elongated; head broad and somewhat depressed; tail rather long, compressed. Dark bluish or brownish, or black, paler below; sides sometimes with small white spots. Length 5-8 inches.

As with the preceding there is no record of the capture of this species within our limits, but careful collecting will probably add it to our fauna.

3. *Hemidactylium scutatum* (Schlegel). Scaly Salamander.

Body slender; head depressed, broadest just behind the eyes; snout short, truncate; base of tail with a decided constriction, beyond which the tail swells out and then tapers to a sharp point; legs weak; toes

short, almost rudimentary. Brown, chestnut, or purplish, bluish white below; above there are numerous pale spots and specks; below there are specks and spots of black. Length 3.5 to 4 inches.

In the collection of the United States National Museum there is a specimen labelled, "D. C.", but with data so insufficient as to throw the locality in some doubt. During the collecting seasons of 1892 and '93 I found the species occasionally under logs in the heavy woods between Little Hunting Creek and the Mt. Vernon estate.

4. *Plethodon cinereus* (Green). Ashy or Red-backed Salamander.

Body elongate, slender, cylindrical; head small and short, snout rounded; eyes large and prominent; limbs short and weak; toes short, the inner ones rudimentary. Brownish black above; whitish or yellowish below, finely marbled with black; back often with a broad, brownish red longitudinal stripe. Length 3.5 to 4 inches.

Both the red-backed and brown varieties of this species are found in abundance throughout the region covered by this list. They are to be looked for under bark, leaves, logs, or flat stones in damp situations in the woods.

5. *Plethodon glutinosus* (Green). Slimy Salamander.

Body cylindrical or somewhat depressed; skin smooth, shining and very slimy; legs moderately developed, the toes short and depressed, the inner on fore and hind legs small, but distinct. Black or blue-black above, paler below; sides with numerous whitish spots about as large as the eye. Length 3 to 7 inches.

Rather common within our limits. I have found it most abundant about Takoma Park and Mt. Vernon.

6. *Spelerpes bislineatus* (Green). Two-lined Triton.

Body elongate and slightly depressed; tail forming about one half the total length; head rather narrow, snout short and rounded. Color yellowish brown or clear yellow above, pale yellow below; along each side of the back there is a brown line extending from the eye to the tail. Length about 3 inches.

A very common species throughout the region. It may be sought under the stones or leaves near springs or small streams.

7. *Sperlepes guttolineatus* (Holbrook). Holbrook Triton.

Body somewhat flattened, elongate and slender, but stouter than in *S. longicaudus*; head flat, snout rounded; tail low and flattened, forming more than one half the total length, tapering to a sharp point. Brownish yellow above, with three stripes of dark brown, one along the median line and one on each side; tail dark brown with vertical, yellow lines; the under surface is yellow mottled with brown. Length about 5 inches.

This triton has been taken at Dun Loring and Munson Hill, Va. It is a southern species and its occurrence in our fauna is probably very rare.

8. *Spelerpes longicaudus* (Green). Long-tailed Triton.

General appearance and proportions very similar to the preceding. Above, bright yellow or orange with many black spots and specks, some of which may form an interrupted band along the sides; tail with vertical black bars; below, the color is paler and there are no spots. Length 5 to 6 inches.

Until the fall of 1896 this salamander was known from our region by a single, very indefinite record which was all the more unsatisfactory that the specimen had been lost. In September of that year I secured a fine, well developed individual from among some damp leaves, near Great Falls, on the Maryland side of the river.

9. *Spelerpes ruber ruber* (Daudin). Red Triton.

Body varying with age but rather heavy and clumsy; head depressed and short, snout rather pointed; tail about two fifths total length, strongly keeled. Color varying from clear coral red in the young to brownish red in the fully adult; above, there are numerous small black spots, distinct in the young but much diffused in old individuals. Length 3 to 6 inches.

The typical form alone occurs here. It is very abundant and has been recorded from nearly every spring in the vicinity. From the muddy margins of a spring near Brookland, I once secured over twenty specimens and from a spring near Accotink, six. I have also seen it crawling about on land after a rain.

10. *Desmognathus fusca fusca* (Rafinesque). Brown Triton.

Body rather heavily built and somewhat depressed; head flat, snout rounded; limbs feebly developed; tail forming about one half total length, circular at base, but much flattened posteriorly. Dark brown, belly paler; back and sides often variously mottled with ocraceous or grayish. Length 3 to 4 inches.

This very active species is quite common about Washington. It is usually found in springs and rapid streams where it can conceal itself under stones and drift, but it is often to be observed lying in a sort of burrow in moss or grass roots near the water.

11. *Diemictylus viridescens* Rafinesque. Green Triton; Newt.

Body rounded and full, with a sharp vertebral ridge; head tapering to the rounded snout, and with three longitudinal grooves above; tail forming about one half the total length, flattened, tapering and with a more or less developed membrane-like fin. Front legs weak, hind legs stout. Above olive green or reddish of varying shades; lemon yellow below,

with numerous scattered black specks; each side with a series of scarlet spots each surrounded by a black ring. The young (var. *miniatus*) are bright vermilion red with the spots on the sides rather indistinct. Length about $3\frac{1}{2}$ inches.

While this species is not often collected, on account of its retiring habits and its very perfect color protection, it is common in most quiet ponds where there is growing vegetation. I have found the immature forms most abundant near Mt. Vernon.

Key to the species of Salientia.

- a. Upper jaw toothless. - - - - - *Bufo lentiginosus*, 12.
 aa. Upper jaw with teeth.
- b. Fingers and toes more or less dilated at the tips, this dilation forming a viscid disk; small species, not over 2 inches long (body measurement).
- c. Disks small; fingers not webbed.
- d. Toes broadly webbed. - - - - - *Acris gryllus*, 14.
 dd. Toes scarcely webbed. - - - - - *Chorophilus nigratus*, 15.
- cc. Disks well developed; fingers somewhat webbed.
- e. Color above clear green, with usually a few golden yellow specks. - - - - - *Hyla evittata*, 18.
 ee. Color above grayish, greenish, or brown variously striped or mottled
- f. Back with irregular lines forming an X, outside of which are other lines; general color brown. - *Hyla pickeringi*, 16.
 ff. Back uniform or mottled, general color grayish-green, gray, or brown. - - - - - *Hyla versicolor*, 17.
- bb. Fingers and toes not specially dilated at the tips and not provided with adhesive disks; larger species, $2\frac{1}{2}$ inches long or more.
- g. Sole of foot with a horny spade-like process; form squat and toad-like; hind legs weak. - - - - - *Scaphiopus holbrookii*, 13.
 gg. Sole of foot without a spade-like process; body frog-like; hind legs powerfully developed.
- h. Sides of back nearly smooth, the glandular thickening of the skin being obsolete. - - - - - *Rana catesbeiana*, 23.
 hh. Side of back with one or more well developed, thickened ridges of skin.
- i. Back with large distinct black spots, more or less regularly arranged.
- j. Outline of dorsal spots irregularly roundish. *Rana pipiens*, 19.
 jj. Dorsal spots squarish in outline and arranged in two fairly regular rows. - - - - - *Rana palustris*, 20.
- ii. Back with small, indistinct spots or none.
- k. A conspicuous dark stripe from snout to front of eye. *Rana sylvatica*, 22.
 kk. No conspicuous dark stripe on side of head. *Rana clamata*, 21.

12. Bufo lentiginosus americanus (Le Conte). Toad.

Body heavy and awkward, the skin everywhere rough and warty; snout short and blunt; limbs shorter than in the frogs. Color sometimes ash gray, black, or even brick red but usually olive or brown with irregular blotches of dark brown; below, dirty yellow. Length $2\frac{1}{2}$ to 5 inches.

The toad is an extremely common animal in our region. It appears early in the spring when its long continued, loud trill is one of the first evidences of the renewed activity of animal life. I have found them breeding in early March.

13. Scaphiopus holbrookii (Harlan). Spadefoot Toad.

Body toad-like, but a little less squat and clumsy; skin pustular but lacking the large warts of the preceding species; both pairs of legs short and stout; hand with two black callosities; foot with an elongated, compressed, spade-like process, black in color, with a sharp horny edge, and situated at the base of the inner toe. Brownish with a slightly paler band extending backward from the eye; sides sometimes mottled with ashy. Length about 3 inches.

There is a single record for this rare species within our limits. It is almost altogether subterranean in its habits, coming forth very rarely, and then at night. Its cries during the breeding season are said to be almost as loud and shrill as a steam whistle.

14. Acris gryllus (Le Conte). Cricket Frog.

Form frog-like; snout pointed; hind legs long, the heel reaching near to or beyond the snout when the leg is turned forward; fingers without web; toes webbed to near their tips; skin of back smooth or with large or small warts. Color variable and changeable; usually the upper surface is gray or brownish, there is often a large green dorsal patch and occasionally this color predominates; often there is considerable reddish; there is a dark triangle between the eyes and a white line from eye to arm; legs with cross bars; below, the color is whitish. Length $1\frac{1}{2}$ inches.

The species has been divided by Cope into two subspecies, *A. gryllus gryllus* and *A. gryllus crepitans*, which are of very doubtful validity. Both are found in abundance along the banks of streams and ponds, whence their continuous metallic cry comes almost without intermission during the season of activity, particularly during hot, sunny days.

15. Chorophilus nigratus feriarum (Baird). Striped Treefrog.

Body and legs rather slender; head rather pointed; fingers with at most only a rudiment of a web; toes with a slight web at their basal joints. Color varying from light ash to fawn and purplish brown; below, cream color; on the back there are three dark stripes, extending from the head to near the end of the body, of these the median sometimes

forks near the middle of its length; upper surface of limbs barred or blotched. Length, $1\frac{1}{2}$ inches.

This species is rarely seen except during its breeding season, when it is quite common. Its cry consists of two or three clear whistle-like chirps, like those of a young turkey, and, after one has learned to distinguish it from that of *H. pickeringi*, serves to betray its presence at once. In the spring of 1896 I collected thirty specimens in less than an hour from the gutters along the Conduit Road near Cabin John's Bridge.

16. *Hyla pickeringi* (Storer). Pickering Treefrog.

General form like the preceding but the body somewhat stouter; fingers and toes with well developed disks; fingers entirely unwebbed; toes half webbed; color ashy, brown, or reddish above; grayish or whitish below; on the back there is an irregular X of dusky; on the sides another dusky line runs parallel with the posterior limbs of the X, and on the head is a broad V-shaped mark; a dark line from snout, through eye, to back of head; limbs barred or mottled. Length about 1 inch.

This species is more common than the preceding and is occasionally met with throughout the summer. Its habits during the breeding season are easily studied, if one will go to some secluded woodland pool with a lantern, and the sight is well worth the trouble. Like many other species, this one has a large gular sac which it inflates when it sings. This sac is distended until it is almost as large as the body, and the skin is so stretched that it is nearly transparent. The muscles of the sides contract tremendously and a clear whistle-like cry is produced, out of all proportion to the diminutive size of the frog. This cry differs from that of the preceding species in that the chirp is repeated monotonously time after time.

17. *Hyla versicolor* Le Conte. Common Treefrog, Chamæleon Treefrog.

Body rather stout and almost toad-like; head broader than long, snout rounded; fingers and toes with large disks; fingers with an evident web; toes webbed to near their tips; skin with numerous small warts above, granulate beneath. Gray-green, gray, or brown, with irregular, indistinct dark blotches and lines; below, white with bright yellow on groin and front and back of thighs. Length 1 to 2 inches.

Common but not often collected. Its "short, loud, trilled rattle" is heard throughout the summer in the evenings or during damp weather, individuals calling and answering from their perches on trees or fences.

18. *Hyla evittata* Miller. Swamp Treefrog.

Form similar to *Chorophilus nigritus* but with blunter snout and slenderer legs: fingers and toes with well developed disks; fingers distinctly webbed; toes webbed to the disks; skin nearly smooth. Color of

adults varying from olive brown to bright leaf green; below, white slightly tinged with yellow; on the back there are often a few small yellow spots. Small specimens will often be found to have a more or less distinct white line extending about half way down the sides of the body from the snout, and both pairs of legs with a whitish band on the anterior surface. Length $1\frac{1}{2}$ inches.

This frog which I first discovered near Mt. Vernon and regarded as *H. cinerea*, has since been shown by Mr. G. S. Miller, Jr., to be a distinct species. My specimens were found along the shore of Little Hunting Creek, October 15th, 1892. They were immature and were evidently looking for winter quarters and were hopping about everywhere among the damp leaves. I collected about fifty specimens, and on October 29th secured another lot. On visiting the locality late in the following spring, I found them among the cat-tails and other large aquatic plants some distance from the shore. Since then it has been observed in Swan Creek and Messrs. Miller and Preble secured full grown specimens from Four-mile Run and at Dyke. Its note is quite unlike that of any of our other frogs and consists of a series of high pitched, rattling croaks, which may remind one slightly of the shrill grunts of a very young pig.

19. *Rana pipiens* Schreber. Leopard Frog.

Form typically frog-like; head rather pointed, its length contained about three times in the body; tympanum about as large as eye; the dorso-lateral folds are rather prominent and between the two is a pair of indistinct, much broken, dorsal folds. Color ashy, olive, or bright green above, uniform white or yellowish below; upperparts with irregular, roundish, black blotches, margined with whitish, and arranged in two irregular rows; usually two spots between the eyes; legs with two rows of spots above. Length 3 to 4 inches.

A common inhabitant of the marshes about Washington and well known to the small boy as the "bloodynoun" or "bloodney." It is one of the first species to come forth in the spring and one of the last to seek its winter quarters. Its notes appear to be somewhat variable, but during the breeding season the cry is a highly characteristic snoring croak or rattle.

20. *Rana palustris* Le Conte. Swamp Frog.

Very similar to the preceding species but with longer head and larger glandular folds; of the latter there are *distinctly two pairs*, the dorso-lateral and the dorsal; the dorsal fold is continuous as far as the pelvic hump; the snout is usually obtuse and the form broader and flatter than in the preceding species. Color pale greenish brown or ashy above, yellowish white below; the blotches on the back are squarish and are arranged in two quite regular rows; sides with two rows of spots smaller than those on the back; hind legs conspicuously barred from the groin to the toes.

Fairly common, but usually living singly in cool pools or in the well-

shaded grass along the banks of some spring-fed stream. Note probably similar to that of the leopard frog.

21. *Rana clamata* Daudin. Green Frog.

Head broad and flattened, snout rounded; eyes large and protruding; skin of back and sides more or less rough; a dorso-lateral glandular fold from eye to pelvic region, this sends a branch behind tympanum to front of arm. Color from bright green to brown, pale below; chin marbled with brown; back usually with indefinite small blotches of dark brown and similar, but larger, blotches on the sides. Length 3 to 4 inches.

This species bears a very close resemblance to young individuals of the bullfrog but may be distinguished at once by the presence of the glandular folds. It is quite common through the spring and early summer. I have found it in abundance in the series of pools between the canal and the river about $2\frac{1}{2}$ miles above Georgetown. Its active movements and its strictly aquatic habits makes it a more difficult species to collect than most other species of this genus. Note, a series of three or four croaks irregularly descending in pitch.

22. *Rana sylvatica* Le Conte. Wood Frog.

Body slender and graceful; head broad; legs long; a dorso-lateral glandular fold from eye to end of body and another from mouth to front of arm. Color grayish or light chocolate brown, sometimes with greenish; beneath, whitish; a light streak from snout to vent, glandular folds often golden yellow and tympanum coppery, a black stripe from snout to front of eye, sides and back sometimes obscurely blotched and limbs barred.

An inhabitant of woodlands exclusively, this species is not often seen except during the breeding season when it sometimes occurs in great abundance in secluded ponds. During the remainder of the summer it prefers to live among the fallen leaves, where its colors correspond so perfectly with its surroundings that it is very effectually concealed. Note, a series of rapid, sharp croaks, all of about the same pitch.

23. *Rana catesbeiana* Shaw. Bull Frog.

Body large and heavy; head large and broad, snout rounded; legs long and strong; skin of back nearly smooth; no dorso-lateral folds; a small glandular fold from eye to front of arm, between this and the tympanum a sharp groove. Color yellow, green, brownish or deep brown, sometimes uniform but usually with indefinite blotches of brown; sides usually with marblings of brown; underparts white or yellowish. Length 4 to 8 inches, or total length 9 to 18 inches.

This, our largest frog, is very common along the larger and deeper watercourses about the city, wherever there is vegetation close to the waters edge to offer it a secure retreat. The thickets along the canal and the Eastern Branch are congenial lurking places from which it is to be taken only by frog hunters who go out at night and spear it from boats. Its roaring bass note is well known to all.

CLASS REPTILIA.

The reptilian fauna of this region includes, according to our present information, about forty species and subspecies. Of these, four are lizards, eight are turtles and the remainder are snakes. For the distinguishing characters of the two orders represented in our fauna the reader is referred to page 122. Below is given the

Key to the Species of Squamata.

- a.* LIZARDS—Sides of lower jaw not independently movable, united by a bony suture in front; shoulder girdle present; eyelids and tympanum usually evident; *limbs 4, in all our species.* Suborder SAURIA.
- b.* Scales on tail, or body, or both, keeled.
- c.* Keeled scales on tail only. *Cnemidophorus sexlineatus*, 25.
- cc.* Both tail and body with keeled scales. *Sceloporus undulatus*, 24.
- bb.* Body and tail with smooth scales only.
- d.* Limbs overlapping when pressed to side. *Eumeces fasciatus*, 26.
- dd.* Limbs not meeting when pressed to side.
Lygosoma laterale, 27.
- aa.* SNAKES—Sides of lower jaw independently movable, united by ligament only; no shoulder girdle; no eyelids; no tympanum; *limbs entirely wanting.* - - - - Suborder SERPENTES.
- e.* Non venomous species; no pit between eye and nostril; no fangs.
- f.* None of the dorsal scales keeled.
- g.* Anal plate divided.
- h.* Scales on tail feebly keeled. - *Virginia valeriae*, 46.
- hh.* Scales on tail smooth like those on body.
- i.* Scales in 13 rows, color brownish.
Carphophis amoenus, 28.
- ii.* Scales in 15 to 17 rows.
- j.* Color grass green. - *Liopeltis vernalis*, 31
- jj.* Color black or blotched light and dark brown.
- k.* Bluish black, with yellow collar.
Diadophis punctatus, 29.
- kk.* Black, no collar; young blotched.
Bascanion constrictor, 33.
- gg.* Anal plate not divided.
- l.* Black or brown, with narrow yellowish cross-lines.
Lampropeltis getulus, 33.
- ll.* Brown or red, with large, dark-margined blotches.
- m.* Chestnut or olive brown, with about 50 rhombic blotches along the back, others on sides.
Lampropeltis rhombomaculatus, 37.
- mm.* Red or brownish red, with a series of triple rings or dark bordered spots; head with yellow or red.
Lampropeltis doliatius, 36.

- ff. Dorsal scales more or less keeled.
- n. Anal plate divided.
- o. Scales in less than 18 rows.
- p. Scales in 15 rows. - *Storeria occipitomaculata*, 44.
- pp. Scales in 17 rows.
- q. Color grass green. - - *Opheodrys aestivus*, 32.
- qq. Color brownish. - - *Storeria dekayi*, 45.
- oo. Scales in more than 18 rows.
- r. Scales in 19 rows. - - *Regina leberis*, 41.
- rr. Scales in 23 to 29 rows.
- s. Snout recurved and keeled.
Heterodon platirhinos, 30.
- ss. Snout normal, without recurved keel.
- t. Ventral plates 130 to 160.
- u. Upper labials 8; preocular 1.
Natrix sipedon, 39.
- uu. Upper labials 9; preoculars 2.
Natrix bisecta, 40.
- tt. Ventral plates more than 200.
- v. Black, with obscure lighter blotches.
Callopeltis obsoletus, 35.
- vv. Red, with dark bordered blotches.
Callopeltis guttatus, 34.
- nn. Anal plate not divided.
- w. Lateral stripe on 3d and 4th rows of scales.
Thamnophis sauritus, 42.
- ww. Lateral stripe on 2d and 3d rows of scales.
Thamnophis sirtalis, 43.
- ee. Venomous species; a deep pit between the eye and nostril; upper jaw in front, with large, erectile, perforated fangs.
- x. Tail short, without a rattle, ending in a horny point.
Agkistrodon contortrix, 47.
- xx. Tail provided with a rattle. *Crotalus horridus*, 48.

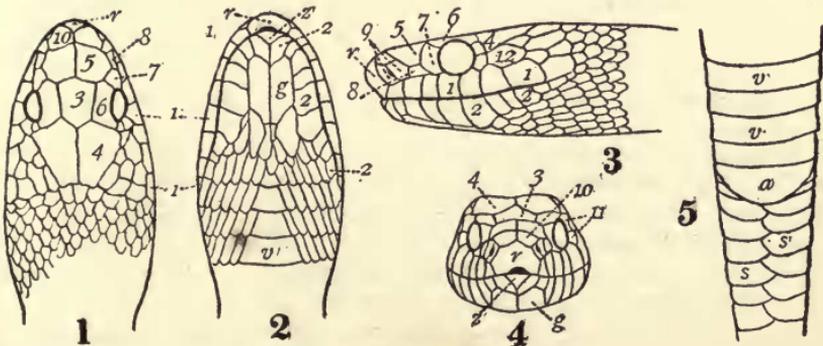


FIG. 2. Topography of a snake. *r*, rostral plate; *a*, anal plate; *v*, ventral plates; *s*, subcaudal plates; *1*, upper labials; *2*, lower labials; *3*, vertical plate; *4*, occipital plates; *5*, postfrontal; *7*, anteorbitals.

24. *Sceloporus undulatus* (Bosc). Pine-tree Lizard.

Head broad and flat, tapering to the short and rounded snout; tail slender, forming considerably more than one-half total length; plates on top of head rather large, a series of these above each eye; back of head with three plates, the median larger than the lateral and with a central translucent spot; scales of back and sides strongly keeled and pointed; those of the ventral surface smaller and smooth. Olive, brownish or nearly black, with undulating lines of dark brown across the back; a row of whitish spots on each side of the back; the tail is crosslined with black and the sides mottled with black and whitish. The males and, possibly sometimes the females, with brilliant green or blackish throat patches which are prolonged onto the arm and sides of the body. Length, 4 to 6 inches.

In our region this harmless and interesting lizard is very common in the higher and drier situations. It is often to be seen during the warm days of summer basking in the sunshine on some exposed rail fence, or log. The eggs are laid early in the summer and hatch in July. By the latter part of August the young begin to shift for themselves and leave the company of the adults.

25. *Cnemidophorus sexlineatus* (Linn.). Six-lined Lizard.

Long and slender, head pointed; top of head with a large median plate, on each side of which, over the eyes, are four smaller plates; ear about as large as eye; neck with two loose folds of skin below; front of thigh and under surface of hind leg with enlarged scales; scales of upper surface of body small, those below large and arranged in eight longitudinal rows; tail nearly twice as long as head and body and covered with large keeled scales. Olive or brownish or green, sides black, with three narrow stripes of yellow; a greenish stripe on back of thigh prolonged on sides of tail. Length, 6 to 10 inches.

As to the occurrence of this species within our limits there is some doubt, but it has been taken at no great distance both north and south so it will doubtless be found here sooner or later. It runs with great swiftness, is difficult to capture, and very little is known of its habits.

26. *Eumeces fasciatus* (Linn.). Blue-tailed Skink, "Scorpion."

Body slender or stoutish, head short, broad behind, snout rather blunt; ear smaller than eye; neck very short and with no loose folds of skin; tail longer than head and body; scales of back, sides and ventral surface about equal in size and smooth, but a row of enlarged scales on under side of tail. Young and medium sized specimens nearly black above, with five yellow lines running from the head to the middle of the tail; the median line forking on the head; the extremity of the tail is often bright blue. As the animal grows older, the stripes becomes obscure, the color of the body becomes olive or brownish, and the head becomes bright red. Length, 6 to 12 inches.

Under the name of "scorpion" this lizard is well known to the rural residents of our region, and by them is regarded as worthy of suspicion if not actually venomous. It is needless to say that there is no foundation for such a notion and the pretty animal is worthy of a better fate than usually is meted out to it. It is fairly common but its agility makes its capture difficult. They are very shy and timid and spend much of their time hidden under leaves and bark or in trees.

27. *Lygosoma laterale* (Say). Brown-back Lizard.

Body elongate, tail long and slender, limbs feebly developed; head short, nearly flat above, the perpendicular sides tapering to the snout; lower eyelid with a transparent spot; ear opening as large as eye; no folds of skin on neck; body covered with smooth scales. Olive or brownish above; abdomen greenish white; sides with a brown, white margined stripe running from eye to tail, below this, between the fore and hind legs may be a similar but narrower stripe. Length, 4 to 6 inches.

A rare species within our limits, only a few specimens having been collected in the neighborhood of Mt. Vernon and Marshall Hall. At Johnson's Gully I have taken three specimens, all of which were found under logs in rather damp situations.

28. *Carphophis amoenus* (Say). Ground Snake.

Head small, snout moderately elongated and rounded; vertical plate hexagonal; prefrontals small or wanting; postorbital single; upper labials, 5, eye over third and fourth; lower labials, 6; ventral plates, 112 to 131; scales smooth and glossy, in 13 rows. Above, rich chestnut brown; below, yellow or salmon. Length, less than one foot.

A not uncommon species, most often discovered by accident under some decaying log or sunken stone. It seems to prefer the rather cool and damp recesses of the thick woods, and so far as I know, is never found crawling about. I have found it frequently in Johnson's Gully and near Mt. Vernon.

29. *Diadophis punctatus* (Linn.). Ring-neck Snake.

Head rather distinct from body, flat; snout rather broad and projecting beyond lower jaw; upper labials, 7 or 8; lower labials, 8, the fifth the largest; ventral plates, 148 to 203; scales smooth, in 15 rows. Blue-black above, orange-red below; a cream colored ring around the neck just behind the head. Length, about 10 inches.

Not as common, perhaps, as the preceding, but to be looked for in the same localities. It has been taken at Mt. Vernon, Takoma Park, near Cabin Johns Bridge, etc. It can be recognized at once by its coloration.

30. *Meterodon platirhinos* Latreille. Hognose Snake; Spreading Adder.

Body thick and heavy; head broad and short; mouth large and much

curved; rostral plate greatly developed, trihedral, pointed and upturned; upper labials, 8; lower labials, 11; ventral plates, 120 to 150; scales keeled, except those of the outer row which are smooth, arranged in 25, or rarely 23 rows. General color, brownish, reddish, or sometimes uniform gray or black; when not uniform there are from 20 to 30 dark dorsal blotches with an alternating series of dark blotches on the side and sometimes a third series low down on the sides; tail with bands of dark brown extending nearly around.

A common species, well known throughout the rural districts under the names, "black adder, spreading adder, blowing viper," etc. Its habits, which have given rise to the last two names, are exceedingly interesting and, as the snake is perfectly harmless, may be easily investigated. The various color phases, mentioned above, have been observed in our region. While they are regarded by the layman as indicating very distinct species they are known, by the herpetologist, to be nothing more than variations of the same thing.

31. *Liopeltis vernalis* (De Kay). Smooth Green Snake; Grass Snake.

Body and tail rather long and slender, the tail forming about one-third the total length; upper labials, 7, the eye over the third and fourth; lower labials, 8, the fifth the largest; scales smooth, arranged in 15 rows; ventral plates, 125 to 140; subcaudals, 69 to 95. Grass green above, greenish yellow below, throat and lower labials yellowish white. Length, 20 inches.

There are several records for the capture of this beautiful and inoffensive snake within our limits. In its habits it differs considerably from the next in that it seems to prefer to live among the grass and seldom if ever climbs above the ground.

32. *Ophedrys æstivus* (Linn.). Keeled Green Snake.

Body and tail very slender, the tail forming, usually, more than one-third the total length; neck slender; head narrow and high and somewhat swollen behind, the snout projecting considerably beyond the lower jaw; eyes large; ventral plates, 150 to 165; subcaudals, 110 to 135. Scales in 17 rows, keeled, except those of outer row and some of those of the second row. Grass green above, greenish white below. Length, 30 inches.

This species resembles the preceding very closely in color but may readily be distinguished by its more slender form and keeled scales. I have kept several specimens in confinement and have never seen one attempt to bite. They are often found twined about the limb of some bush, or running rapidly about through the limbs of trees or shrubbery in search of their food.

33. *Bascanion constrictor* (Linn.). Black-snake; Blue-racer.

Body long and slender, the tail constituting about one-fourth the total length; head distinct, long, pointed, high, the crown flat; eye in a groove

which runs forward to the nostril; snout rather projecting and pointed; rostral plate high, upper anteorbital large, the lower very small; upper labials 8 to 10, the sixth very large; scales in 17 (15 to 19) rows, all smooth; ventral plates, 171 to 190; subcaudals, 80 to 110. Uniform black above, greenish white or lead color below; chin, lower jaw and upper labials with more or less white. The young are grayish olive, with a row of reddish brown, black bordered spots along the middle of the back, disappearing on the tail; sides with many specks and spots of brown; head mottled and specked; below, the color is greenish white with three or four specks of brown on each scale. They begin to assume the color of the adults when about 18 inches long. Length 6 feet.

This snake is very common with us and is often seen, especially among the undergrowth near streams and the margins of thick woods. It is perfectly harmless but when cornered will fight viciously. Its bite although severe is no worse than a bad scratch and will produce no more serious results.

34. *Collopeltis guttatus guttatus* (Linn.). Spotted Coluber.

Body rather elongate and slender, the tail forming about one-sixth the total length; head narrow, snout rounded; upper labials, 8; lower labials, 11; ventral plates, 214 to 236; subcaudals, 63 to 79; scales in 27 rows, those of the five central rows faintly keeled. Color above, light red becoming paler on the sides; back with about 40 irregular dark red spots each with a darker border; below these, on the side, is another series of spots, alternately larger and smaller, the larger alternating with the dorsal spots; lower surface checkered with black and yellow; head with dark bands, one through the eye to the corner of the mouth and onto the neck, another in front of this, and a third from the back of the head to the neck, Length, 4 feet.

There are two records of the capture of this snake within our limits, one at Wheaton, Md., the other at the U. S. Insane Asylum grounds. It is a southern species and is doubtless very rare here.

35. *Collopeltis obsoletus obsoletus* (Say). Allegheny Blacksnake.

Body moderately slender, the tail forming about one-fifth the total length; head rather broad, snout blunt; rostral plate broad, snout projecting; upper labials, 8 (rarely 9), the sixth and seventh the largest; lower labials, 11, the sixth the largest; scales in 27 (rarely 25) rows, all but the outer ones feebly keeled; ventral plates, 230 to 250; subcaudals, 53 to 86. Black or bluish black above, usually with obsolete lighter blotches, showing principally between the scales; below, the color is yellowish becoming darker posteriorly; lower jaw and throat white. Length, 3 to 8 feet.

This species is quite common, especially along Rock Creek and the Potomac River above Washington, I have seen it frequently on High Island and have taken two specimens at Takoma Park.

36. *Lampropeltis doliiatus* (Linn.). House-snake; Milk-snake; Chicken-snake.

Head small; upper labials 7; lower labials 9 (occasionally 10), eye over third and fourth; scales smooth, in 21 rows (rarely 19, 20, or 22); ventral plates, 184 to 214. Length, 2 to 4 feet. The coloration is variable and on it numerous subspecies have been based; three of these occur within our limits.

a. Lampropeltis doliiatus doliiatus. (Linn.).

Bright red above, with 20 to 30 triple rings, of which two black ones enclose one of white or yellow; the black rings do not pass around the body, but the anterior of one set turns forward and joins the posterior of the preceding set on the ends of the ventral plates; sides with spots alternating with the dorsal blotches. Common in all parts of the District.

b. Lampropeltis doliiatus triangulus. Cope.

Brownish red or gray above with a dorsal series of about 55 grayish brown or chocolate colored, black bordered blotches which do not reach the ventral plates; on each side are two, more or less confluent, rows of spots, blue black in color, the lowest row situated on the first and second rows of scales; a spot of yellow on the back of the head and a band of black bordered above by yellow running from in front of the eyes back onto the neck. There are seven records of the capture of this form within our limits.

c. Lampropeltis doliiatus collaris. Cope.

Yellowish red with a series of reddish brown, dark bordered spots which do not extend further down than to the second row of scales; alternating spots black, extending from the second row of scales to, and including, the ends of the ventral plates; top of head with cross bands of yellow and brown or black; sides of head with black and yellow bands. This form seems to be rarer here than either of the preceding as there are but few records of its capture.

37. *Lampropeltis rhombomaculatus* (Holbrook). Brown Snake.

Head small, hardly distinct from the body, snout blunt; upper labials, 7; lower labials, 9; scales all smooth, in 21 rows; ventral plates about 205; chestnut brown above, becoming lighter on the sides; below, light reddish yellow, obscurely blotched with brown; on the back is a series of from 52 to 60 rhomboidal, dark brown blotches and on the sides a series of about 42 smaller, rather indistinct spots mostly alternating with those of the dorsal series; neck and back of head with a longitudinal stripe of dark brown on each side. Length, 30 to 46 inches.

Until within the last few years this snake was regarded as a great rarity but it is apparently becoming quite common in our region. It was noticed first near Alexandria, then at Rosslyn, and a few seasons later began to be taken on the northern side of the Potomac. It now seems to have extended its range as far north as Woodside. It is a very handsome snake, graceful, and usually quite good tempered.

38. *Lampropeltis getulus getulus* (Linn.). Chain Snake; King Snake.

Body rather slender, head small; snout rather compressed and projecting; upper labials, 7; lower labials, 10, the fourth and fifth the largest; ventral plates, 210 to 225; scales in 21 to 23 rows, all smooth. Black above, with about 33 continuous yellow lines running across the back and forking on the sides to join the branches from the lines in front and behind; a series of small black spots on the sides alternating with the large dorsal spots. Belly checkered with black and yellow. Length, 2 to 4 feet.

Judging from the records this snake must be quite common in this vicinity, but in the course of 10 years collecting I have never been so fortunate as to secure a specimen.

39. *Natrix sipedon* (Linn.). Water Snake.

Head rather narrow, pointed in front; upper labials usually 8, the sixth and seventh large, the eye over the fourth and fifth; lower labials, 10; scales strongly keeled, in 23 or 25 rows; ventral plates, 135 to 150; subcaudals, 60 to 75. Color variable, brownish; back and sides each with a series of large, square, dark blotches, transverse and alternating with each other; belly with brown blotches. Length 1 to 4 feet.

This disagreeable but perfectly harmless snake is very abundant along the banks of our streams and small ponds. The margin of the canal in the neighborhood of High Island is a favorite haunt.

40. *Natrix bisecta* Cope. Washington Water Snake.

Head rather narrow, the snout bluntish; upper labials, 9, eye over third and fourth; lower labials 9; scales all keeled, in 25 rows; ventral plates, 143; subcaudals, 67. Olive brown above, with a row of small longitudinal blackish spots on the sides and two very indistinct longitudinal stripes on the anterior half of the body; head with three light spots above; belly nearly plain. Length, 13 inches.

The type specimen, which remains unique, was collected about 15 years ago in the grounds of the central station of the U. S. Fish Commission. In this specimen the rostral plate is divided into two by a vertical fissure, a character which must be regarded as accidental.

41. *Regina leberis* (Linn.). Striped Water Snake.

Head small, little distinct from body, snout rounded; upper labials, 7, eye over third and fourth; lower labials, 10, the fifth and sixth largest; scales all keeled, in 19 rows; ventral plates, 140 to 150; subcaudals, 70 to 80. Chestnut brown above with three longitudinal narrow stripes of brownish black, one on the median line and one on the fifth row of scales; belly yellow with two brown bands. Length, 2 feet.

Quite common along the banks of our shallow streams and ponds. It appears very early in the spring and is never found far from the water.

42. *Thamnophis sauritus* (Linn.). Riband Snake.

Body rather elongate, head distinct; tail forming about one-third total length; upper labials, 7 or 8; lower labials 10, the fifth and sixth large; scales distinctly keeled, in 19 rows; ventral plates, 150 to 180; subcaudals, 100 to 120. Above, the color varies from light chocolate to almost black, relieved by three stripes of greenish white or yellow; the dorsal stripe lies on the median row of scales and the adjacent half of the next row on each side; the lateral stripes are on the third and fourth rows above the ventral plates. The lower surface is greenish white without markings. Length, 2 to 3 feet.

This snake is quite abundant about Washington and is to be looked for in almost any locality. It is most common, however, in low meadows or near the edges of streams.

43. *Thamnophis sirtalis* (Linn.). Common Garter Snake.

Body varying from slender to quite stout, head distinct; tail forming about one-fourth or one-fifth the total length; upper labials, 7 or 8, eye over third and fourth; lower labials, 10; scales keeled, in 19 rows; ventral plates, 140 to 180; subcaudals, 50 to 90. Upper surface varying from olive to dark brown as a ground color; a narrow, indistinct, greenish yellow line along the back, on each side of which are three series of small indistinct dark brown spots, about 70 in each row from head to vent; sides and belly greenish, but there is a lighter tint on the second and third rows of scales; ends of ventral plates each with a black blotch. Length, 2 to 3 feet.

Thamnophis sirtalis dorsalis (Baird and Girard).

A form of the above which has been reported from this locality differs in having the dorsal stripe broad and two rows of small distinct spots on each side.

The garter snakes are perhaps the most familiar and well-known of all our snakes and are to be met with in almost every part of the region. Frogs form an important part of their diet and consequently they are most abundant in moist situations and near the water. When cornered they will fight savagely but their bite is perfectly harmless.

44. *Storeria occipitomaculata* (Storer). Red-bellied Snake.

Snout short and blunt; upper labials, 5 to 6, growing larger posteriorly, eye over third and fourth; lower labials, 6 or 7; scales in 15 rows, all keeled; ventral plates, 117 to 128; subcaudals, 43 to 50. Olive brown to reddish gray, sometimes uniform, but usually with a paler dorsal band bordered by blackish dots; sides with obscure dots; back of head with three pale blotches; belly salmon red. Length, 12 inches.

Not uncommon; I have collected it at Johnson's Gully, Mt. Vernon and at various points along the Potomac above Georgetown.

45. *Storeria dekayi* (Holbrook). DeKay's Snake.

With the general form and proportions of the preceding; upper labials, 7, eye over third and fourth; lower labials, 7, fourth and fifth large; scales in 17 rows, all keeled; ventral plates, 120 to 145. subcaudals, 40 to 60. Grayish brown, with a clay colored dorsal band, bordered by a row of brown or black dots (occasionally a second series lower down); a dark patch on each side of the back of the head; belly grayish, yellowish or reddish. Length, 12 inches.

This species is perhaps more common than the preceding and is less retiring in its habits. I have taken it in some numbers at the localities just mentioned.

46. *Virginia valeriæ* (Baird and Girard). Valeria's Snake.

Head small, narrow, and relatively high; snout pointed and the sides of the head perpendicular; upper labials, 6, the fifth largest, eye over third and fourth; lower labials, 6; scales in 15 rows, those on the tail feebly keeled, all the others smooth; ventral plates, 111 to 128; subcaudals, 24 to 37. Yellowish or grayish brown above, with usually scattered dots forming a faint line on each side of the back; a faint light line along the middle of each scale; beneath, the color is uniform dull yellow. Length, 8 to 10 inches.

Not an uncommon species in thick woods,

47. *Agkistrodon contortrix* (Linn.). Copperhead.

Stoutish but with rather slender neck. Head large, flat, triangular, and with the sides in front of the eyes perpendicular; upper labials, 7 or 8, none of them reaching the eye; lower labials, 10; scales in 23 rows, all keeled; ventral plates, 150 to 155; subcaudals, 42 to 52, all entire except the last 8 to 18. Hazel brown, sides with a series of 15 to 25 λ shaped chestnut brown blotches which extend to or across the vertebral line; top of head coppery-red; sides of head and end of snout cream colored; belly yellowish, with 25 to 45 dark spots on each side. Length, $1\frac{1}{2}$ to 3 feet.

This serpent is still not uncommon notwithstanding the efforts to exterminate it. It is a frequenter of cool, damp woods and generally chooses a place where rock debris will afford it a ready refuge in time of danger. Although its bite is extremely dangerous, it is not often inflicted, the reptile seeming to prefer to run away rather than fight. I have taken two or three large specimens alive which showed no disposition to bite until after their capture.

48. *Crotalus horridus* (Linn.). Common Rattlesnake.

Form of head and body like the preceding species but with the end of the tail provided with a jointed rattle. Upper labials, 12 to 16, none of them touching the orbit; lower labials 13 to 18; scales in 23 to 25 rows, all, except those of outer row, keeled; ventral plates, 165 to 175;

subcaudals, 19 to 25. Ground color above, cream color to yellowish or very dark brown, with three rows of confluent irregular brown spots forming zigzag cross blotches, bordered with sulphur yellow; tail black; upper lip sulphur yellow; lower lip lighter; belly yellow with some mottlings and sprinklings of black. Length, 2 to 5 feet.

The evidence as to the occurrence of the rattlesnake within our limits is not altogether satisfactory, yet it is of such a character as to make it seem extremely probable that the species is still to be found about the rock slides along the Potomac River above the city.

Key to the species of *Chelonia*.

- a.* Tail long, about equal to the plastron. - *Chelydra serpentina*, 49.
aa. Tail much shorter than the plastron.
b. Marginal plates, 22.
c. Hinder lobe of plastron considerably more than $\frac{1}{4}$ as wide as the carapace. - - - - *Kinosternon pennsylvanicum*, 50
cc. Hinder lobe of plastron not more than $\frac{1}{4}$ as wide as the carapace. *Aromochelys odorata*, 51.
bb. Marginal plates, 24.
d. Plastron without hinge, immovably joined to the carapace.
e. Plates of carapace nearly or quite smooth.
f. Carapace without round yellow spots.
g. Neural and costal plates alternate. *Pseudemys rubriventris*, 52.
gg. Neural and costal plates arranged in 4 nearly straight rows across the back. - - - *Chrysemys picta*, 53.
ff. Carapace with many round yellow spots. *Clemmys guttatus*, 54.
ee. Plates of carapace rough, each one with low, concentric ridges. *Malaclemmys centrata*, 55.
dd. Plastron with a hinge across its middle and united by a movable suture with the carapace. - - *Terrapene carolina*, 56.

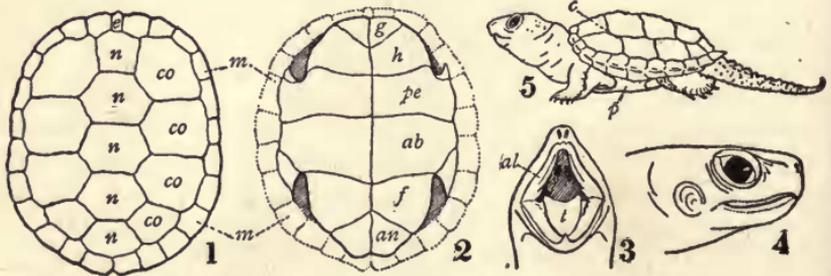


FIG. 3. Topography of a turtle. *e*, nuchal plate; *n*, neural plates; *co*, costal plates; *m*, marginal plates; *g*, gular plates; *h*, humeral plates; *pe*, pectoral plates; *ab*, abdominal plates; *f*, femoral plates; *an*, anal plates; *c*, carapace; *p*, plastron; *al*, alveolar surface; *t*, tongue.

49. Chelydra serpentina (Linn.). Snapping Turtle.

Shell high in front, low and notched behind, and with three keels, a median and two lateral, which become obsolete with age; body heaviest forward; head and neck very large, the snout narrowed forwards; jaws strongly hooked and very powerful; tail long, its upper margin with a crest of horny compressed tubercles, its ventral surface with two rows of moderate scales; plastron small, cross shaped, with nine plates besides the very narrow bridge; claws, 5-4, strong; soft skin everywhere with wrinkles and warts; fore-arm, hands, and feet with large scales. Carapace dusky brown or black, head and neck brown, plastron and soft skin whitish or yellow. This species, it is said, sometimes attains a length of $4\frac{1}{2}$ feet, but the largest specimen which I have seen in this locality was 2 feet long. It is fairly common in the marshes, ponds, and shallow waters about Washington.

50. Kinosternon pennsylvanicum (Bosc). Eastern Mud Turtle; Skillpot.

Body oval; carapace with three indistinct keels, evident in the young but entirely disappearing in the adult; plastron large, almost filling the opening of the carapace, its anterior and posterior lobes movable on the fixed central portion, the anterior lobe rounded and with a single gular scute, the posterior lobe notched behind; head of moderate size. Males with two patches of sharp edged scales on the hind legs and the tail ending in a horny point. Carapace horn color or brown, plastron yellow or brown; soft skin above, brownish with yellow spots; head and neck with yellow stripes; skin of lower surfaces yellow. Length, about 5 inches.

Fairly common in the marshy parts of the District.

51. Aromochelys odoratus (Bosc). Marsh Turtle; Stink Pot.

Body oval but much narrower in the adults than in the young; the carapace with a more or less prominent median keel; plastron narrow, lacking much of filling the opening of the carapace, only its anterior lobe movable; gular scute single; posterior lobe of plastron notched behind; head large, snout projecting, jaws strong, the lower one hooked. Tail of males coiled at tip and furnished with a small nail. Carapace brownish or horn color, often spotted or striped with dark brown; upper surfaces of head, neck, and limbs brown, the lower surfaces paler; plastron yellow; head with two yellow stripes on each side. Length, 5 inches.

This disagreeable and repulsive turtle is often met with in the marshes about the city and can usually be obtained with ease at Four Mile Run or the Bennings Swamp. It is sometimes taken by the angler on his hook.

52. Pseudemys rubriventris (Le Conte). Red-bellied Terrapin; Slider.

Body oval, less rounded and less elevated in the adults than in the young; alveolar surface of jaw broad and with a longitudinal, tuberculated

ridge; jaws coarsely serrated, the upper with a prominent hook on each side of the median notch; a row of large scales along the outer edge of the fore feet; neck with scales; loose skin between legs scaleless. Color exceedingly variable, dusky with irregular red markings above; marginal plates with much red; plastron red or partly yellowish; head and neck brown with reddish lines. Length, 6 to 8 inches.

A rather common species and probably the best known, as it is brought in numbers to our markets and sold for food. It is to be looked for in the same localities as the preceding.

53. *Chrysemys picta* (Hermann). Painted Turtle.

Shell broad and low, the surface very smooth, and with no traces of a keel; plates of carapace arranged in four, nearly straight, transverse rows; upper jaw with a small tooth on each side of the median notch, alveolar surface narrow and with a low, smooth ridge on each side for about half its length; plastron broad and flat, truncated behind. Greenish black above, the plates margined with paler; marginal plates marked with bright red; plastron yellowish, often blotched with brown; head and neck with yellow stripes. Length, 4 to 5 inches.

Our most common species. It occurs in great numbers in the low marshes along the river and the Eastern Branch. An energetic collector once brought me fifty specimens of this turtle which he had secured in one afternoon in the marsh near Bennings.

54. *Clemmys guttatus* (Schneider). Speckled Tortoise.

Shell low, broad, and without traces of keel except sometimes in the young; nuchal scute very narrow; plastron large, its posterior border slightly emarginate; upper jaw slightly notched in front, alveolar surface very narrow; legs and feet all covered with scales, those of the front limbs large and overlapping; tail long, that of the male bringing the vent beyond the end of the carapace. Color black above, often with reddish-brown tints; each scute with from one to twelve round orange spots; plastron red, orange, and black, the latter usually predominating; head black, with orange dots, neck and soft skin about legs with more or less red.

Very common in about the same localities as all the preceding.

55. *Malaclemmys centrata* (Latreille). Diamond-back Terrapin.

Carapace broad, rather depressed and rising gradually to the central ridge, the plates which cover it always with numerous concentric, low ridges; upper jaw not notched in front, alveolar surface smooth. Greenish or almost black, plates of both carapace and plastron usually with dark concentric lines. Length, 4 to 12 inches.

There is a single record for this turtle within our limits and was probably based upon some individual which had escaped from the market.

56. *Terrapene carolina* (Linn.). Box Turtle.

Shell broadly oval, high and very convex, heavy and solid; posterior portion of carapace with a well-defined keel in the young, this more or less evident in the adults; plastron large, tightly closing the opening of the carapace, consisting of two lobes movable by hinges on each other and the carapace; upper jaw with a median hook but no notch, alveolar surface narrow; limbs and feet scaly; tail short. The colors of the carapace are yellow and brown or black, variously arranged and with sometimes one and sometimes the other color predominating; the young have a single yellow spot on each scute; plastron with black and yellow; head, neck, limbs, and tail black, with yellow spots. Iris of males red, and the skin of the neck and legs more or less suffused with orange. Length, about 5 inches.

Abundant in the woods everywhere about the city. On a single short walk in the early morning I have found 8 or 10 of this species.